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TITLE: SILICON NITRIDE SINTERED COMPACT AND  
ITS PRODUCTION  
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ABSTRACT:

PROBLEM TO BE SOLVED: To obtain a dense high strength sintered compact by a single gas pressure sintering process without requiring a large-scale apparatus by firing a green compact consisting of a powdery starting material for  $\text{Si}_3\text{N}_4$ ,  $\text{Yb}_2\text{O}_3$  powder, a powdery Mg compd. and a powdery Al compd. in two stages under specified conditions in an inert atmosphere.

SOLUTION: The green compact is preferably fired in two stages in the inert atmosphere. In the 1st stage, the green compact is heated

sintering and simultaneously powder of TiN or metallic Ti or fine particles of  $\text{TiO}_2$  or the like which is converted into TiN or metallic Ti during sintering are added to prepare a powdery mixture. This mixture is sintered at about  $1,780^\circ\text{C}$  under about  $300\text{kg/cm}^2$  pressure for about 90min to obtain the titled ceramics made of an  $\text{Si}_3\text{N}_4$ -additive type sintered body contg. 2~30wt.% fine grains of TiN or metallic Ti dispersed in the second phase of the grain boundary and in the  $\text{Si}_3\text{N}_4$  grains.

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